Shop Manual

150A
150FA

CRANE

SERIAL NUMBERS

150A -09695 - 10827
150FA -09695 - 10827

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October 2002

Shop Manual Set SMC-150FA

Covers Model 150-FA

S/N All Serial Numbers

Contains the sections listed below:

1	A-01.20	ROSS POWER STEERING GEAR (G-R-C)
2	B-02.10	TORQUE CONVERTER (MODEL C272 & C273) (G-C)
3	C-07.00	TRANSMISSION (CLARK 2420) (G-C)
4	C-10.00	TRANSMISSION (TT-2241-1) ALLISON (C)
5	E-02.03	PRIMARY MANIFOLDS AND CONTROLS (C)
6	E-02.04	PRIMARY MANIFOLD AND CONTROLS (C)
7	E-02.40	SECONDARY MANIFOLD ASSEMBLY (C)
8	E-03.10	HYDRAULIC CRANE CYLINDERS (C)
9	E-03.11	POLYURETHANE ONE PIECE ROD SEAL USED ON BOOM CYLINDERS (C)
10	E-03.12	HYDRAULIC CRANE BOOM LIFT CYLINDER (C)
11	E-03.13	DUAL CROWD CYLINDER - FOUR SECTION POWER BOOM (C)
12	E-10.10	HYDRAULIC WINCH MOTOR (COMMERCIAL SHEARING) (C)
13	E-11.30	SWING DRIVE MOTOR (COMMERCIAL SHEARING) (C)
14	E-12.01	TANDEM PUMP (COMMERCIAL SHEARING MODEL 25X) (C)
15	E-14.00	SWING COUNTERBALANCE VALVE (C)
16	E-15.00	HYDRAULIC TROUBLESHOOTING (C)
17	F-06.20	BOOM WINCH ASSEMBLY (C)
18	F-10.00	SPRING MOTORS (C)
19	G-06.00	PLANETARY DRIVE AXLE (CLARK SERIES DS-12152) (C)
20	G-07.00	ROCKWELL AXLE ASSEMBLY (C)
21	G-07.10	CLARK AXLE ASSEMBLY (C)
22	J-02.00	LUBRICATION SPECIFICATIONS (G-R-P-C-M)
23	K-02.00	WAGNER POWER MASTER CYLINDER USED WITH FOUR WHEEL SERVICE BRAKES (G-C)
24	K-06.00	DELCO MORAINE HYDRAULIC POWER BRAKE ASSEMBLY (WITH ROCKWELL AXLES ONLY) (C)
25	K-06.50	BENDIX MASTER CYLINDER & POWER BOOSTER (C)
26	K-07.00	MINNESOTA BRAKE VALVE (G-P-C)
27	K-10.30	DELCO MORAINE POWER BOOSTER (C)
28	L-03.00	WIRING DIAGRAMS - CRANES (C)
29	L-10.00	TROUBLESHOOTING & REMOVAL OF CRANKING MOTORS (M-P-G-R-C)
30	L-11.00	TROUBLESHOOTING & REMOVAL OF ALTERNATORS (M-G-P-R-C)
31	N-03.40	PRE-DELIVERY PROCEDURES (C) (NOT INCLUDED - LISTED FOR REFERENCE ONLY)
32	O-01.00	HEAD AND HOOK BLOCK (C)
33	O-03.00	DRESSER HYDRAULIC CRANE - WIRE ROPE SPECIFICATION (C)
34	Y-01.00	GENERAL TORQUE VALUES (G-R-P-C-M)

KOMATSU DRESSER COMPANY GALION DIVISION GALION, OH 44833

GRADER d
PLANER ☐
ROLLER ☑
CRANE d

Shop Manual A-1.20 C6

ROSS POWER STEERING GEAR

APPLICABLE GRADER MODELS	SERIAL NUMBERS
118A	07245 thru 07600
118B	07601 thru 10750
118C	10751 thru 12013
104A	07245 thru 07600
104B	07601 thru 10750
104C	10751 thru 12013
104HA	07245 thru 07619
104HB	07620 thru 10693
160B	02155 thru 02714
160C	02715 thru 03029
160L	02121 thru 03083
T500A	02601 thru 07994
T500L	02944 thru 07994
T600B	01501 thru 02535
APPLICABLE ROLLER MODEL§	**SERIAL NUMBERS**
PTR 9-Wheel Roller	00101 thru 05678
APPLICABLE CRANE MODELS	**SERIAL NUMBER§**
80	01001 thru 03131
90 thru 125	01150 thru 08774
90A thru 125A	02006 thru 08774
125F	07247 thru 08774
125FA	07990 thru 08774
140F	07571 thru 08774
150A	02832 an3 Up
150FA	07305 and Up
200FA	09401 and Up

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DRESSER INDUSTRIES DRESSER
Dresser Industries, Inc. • Construction Equipment Division • P.O. Box 647 • Galion, OH 44833 U.S.A.
(419) 468-4321 • Telex: 987430 • Cable: Galiron

0783

CAUTION

ALL COMPONENTS MUST BE PROPERLY SUPPORTED DURING DISASSEMBLY AND ASSEMBLY.

ALL JACKING, HOISTING, AND GENERAL WORKSHOP EQUIPMENT REQUIRED FOR THIS OPERATION MUST BE IN GOOD WORKING ORDER.

EXTREME CAUTION TO BE OBSERVED AT ALL TIMES TO PREVENT INJURY.

SAFE WORKSHOP PRACTICES ARE A MUST.

GENERAL TORQUE VALUES

The following General Torques are to be used in all cases where SPECIFIC TORQUES are not given.

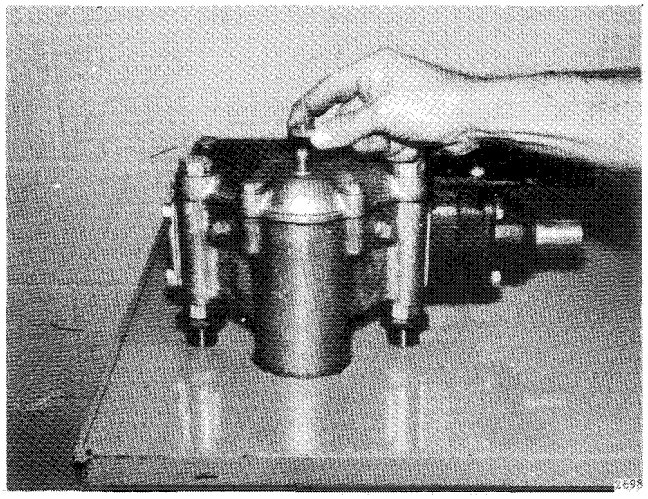
NOTE: Torque Values listed throughout this manual are Lubricated (Wet) Threads; values should be increased 1/3 for Non-Lubricated (Dry) Threads.

Thread Size	Heat treated material Grade 5 & Grade 8			
	Grade 5 (3 radial dashes on bolt or cap screw head)		Grade 8 (6 radial dashes on bolt or cap screw head)	
	Foot Pounds (Ft. Lbs.)	Newton Meters (Nm)	Foot Pounds (Ft. Lbs.)	Newton Meters (Nm)
1/4 - 20	6	8	9	12
1/4 - 28	7	9	11	15
5/16 - 18	13	18	18	24
5/16 - 24	15	20	21	28
3/8 - 16	24	33	34	46
3/8 - 24	27	37	38	52
7/16 - 14	38	52	54	73
7/16 - 20	42	57	60	81
1/2 - 13	58	79	82	111
1/2 - 20	65	88	90	122
9/16 - 12	84	114	120	163
9/16 - 18	93	126	132	179
5/8 - 11	115	156	165	224
5/8 - 18	130	176	185	251
3/4 - 10	205	278	290	393
3/4 - 16	230	312	320	434
7/8 - 9	305	414	455	617
7/8 - 14	335	454	515	698
1 - 8	455	617	695	942
1 - 14	510	691	785	1064
1 1/8 - 7	610	827	990	1342
1 1/8 - 12	685	929	1110	1505
1 1/4 - 7	860	1166	1400	1898
1 1/4 - 12	955	1295	1550	2102
1 3/8 - 6	1130	1532	1830	2481
1 3/8 - 12	1290	1749	2085	2827
1 1/2 - 6	1500	2034	2430	3295
1 1/2 - 12	1690	2291	2730	3701
1 3/4 - 5	2370	3213	3810	5166
2 - 4 1/2	3550	4813	5760	7810

DISASSEMBLY:

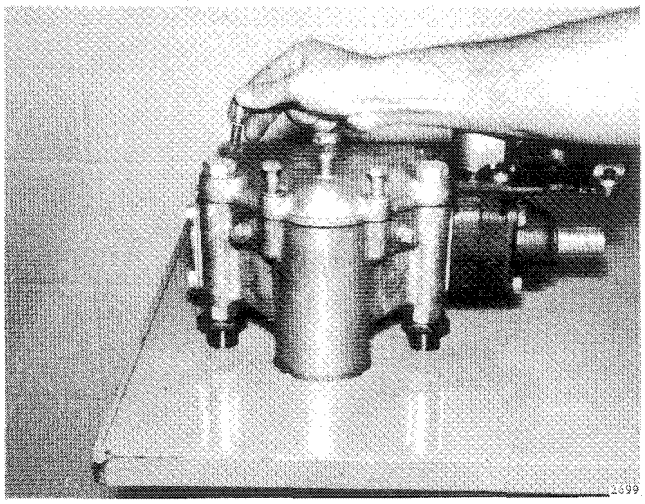
1

Remove adjusting screw lock nut.



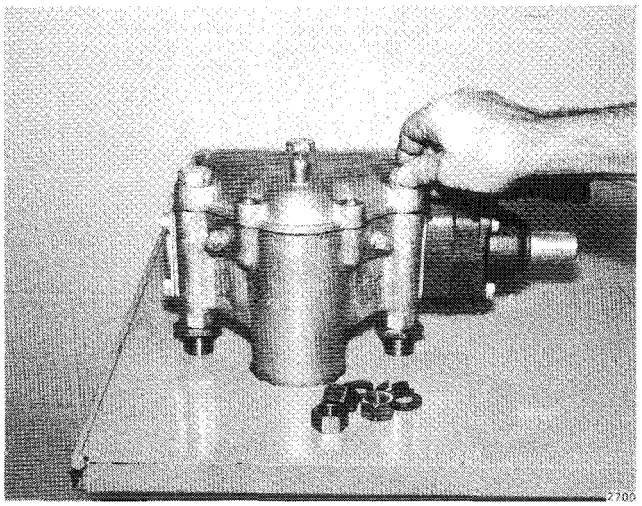
2

Remove small cap screws from cover.



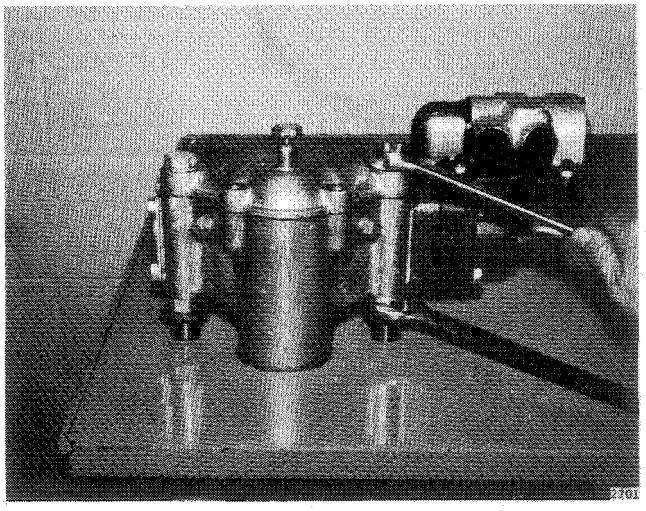
3

Remove nuts and washers from ends of larger cover bolts (beneath steering gear mounting pad), if so equipped.



4

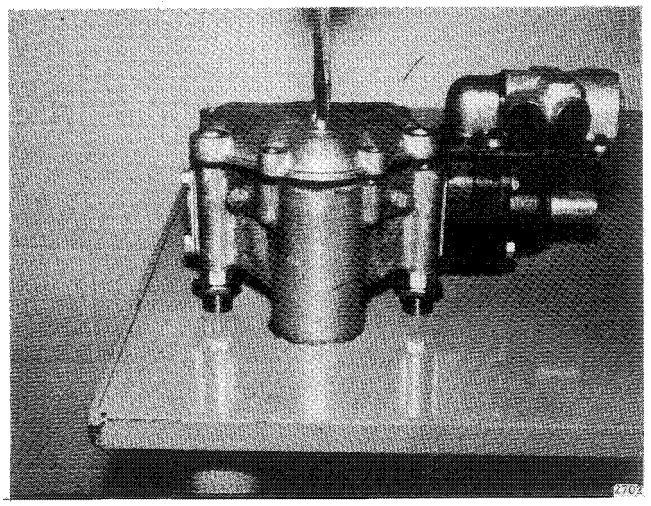
Remove large cover retaining bolts: if so equipped.



5

On previous models (with shim-adjusted lever shaft), cover may now be lifted off. Proceed to Step 9 on page 4.

On later models (with screw-adjusted lever shaft), use screwdriver to turn adjusting screw clockwise. This will lift cover from housing. Screw must be turned all the way through the housing. Proceed to Step 6 on page 3.



Some previous model motor graders and all rollers and cranes with the Ross unit are equipped with a one-piece steering shaft. The pitman arm is splined to the lower end of the lever shaft in these models.

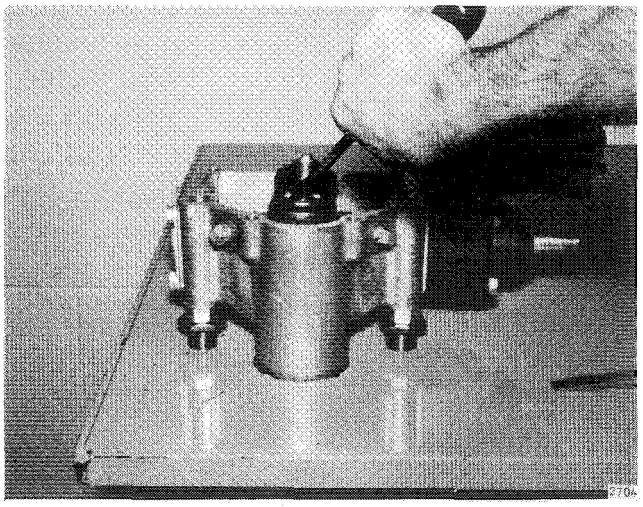
To remove the pitman arm from the lever shaft, remove nut and washer from splined end. Raise lever shaft and insert wood block under splined end to raise stud roller bearing away from cam. This prevents damage to stud roller bearing and cam. Then drift pitman arm from shaft.

This is the sample of the manual if you need complete manual

Click Here to download

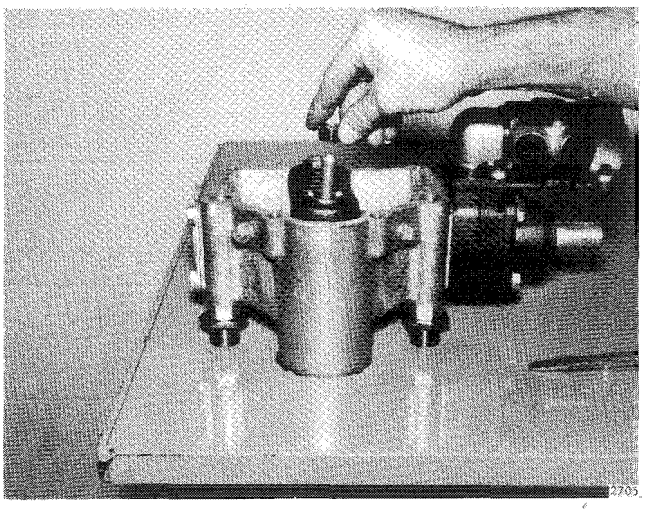
6

Pry staked portion of adjustinq screw lock nut from slot in lever shaft.



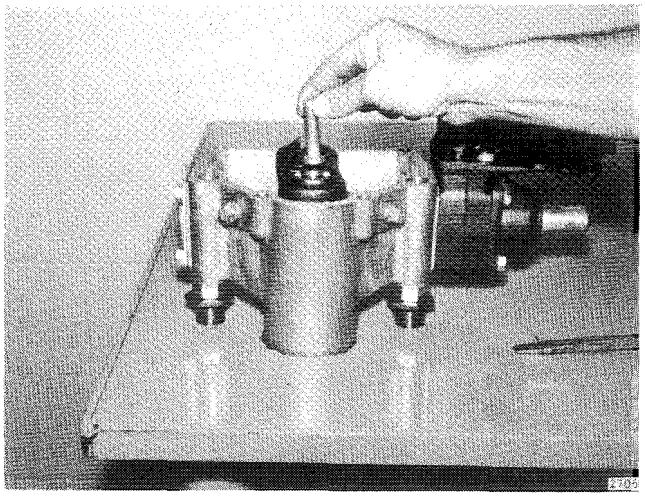
7

Remove adjusting screw lock nut.



8

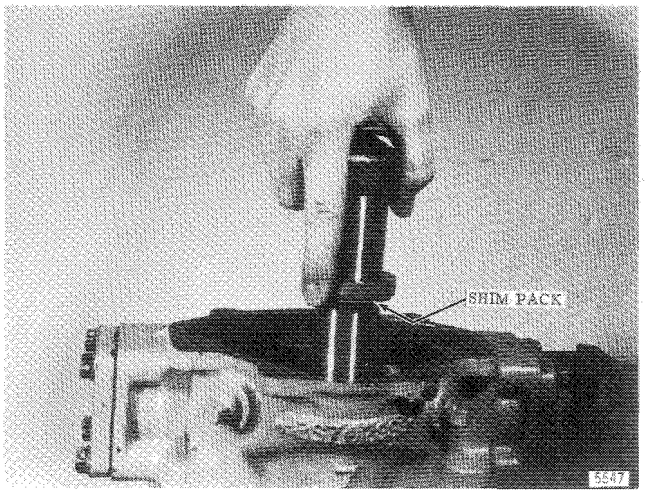
Lift adjusting screw from pocket in lever shaft.



9

On previous models (with shim-adjusted lever shaft), remove lever shaft and shim pack from gear housing. Keep shim pack intact.

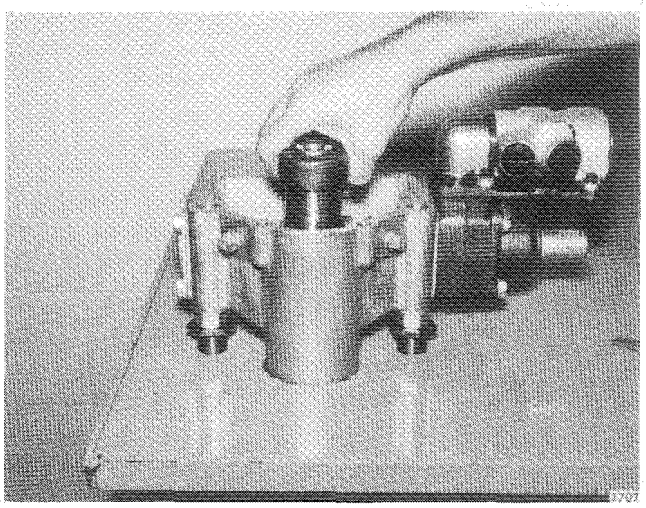
This step is normally done only if to replace shaft, bushings or seal. If none of these replacements are required, slide lever shaft up, rotate 180°, and rest lever on back of case.



10

On later models (with screw-adjusted lever shaft), no shim pack is used to adjust lever shaft stud roller to cam. Adjustinq screw holds lever shaft in position.

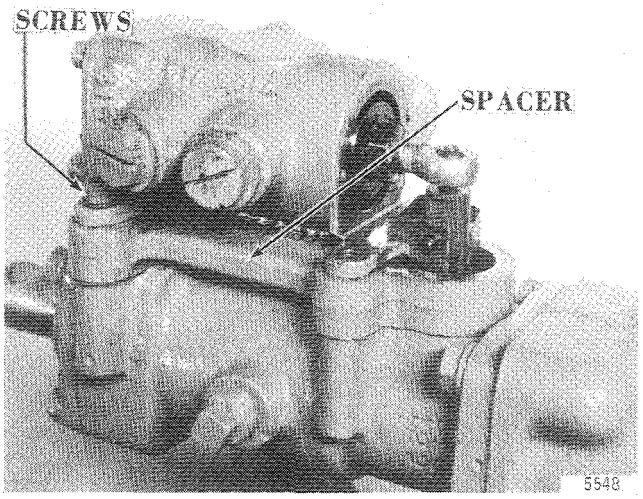
Remove lever shaft only if to replace shaft, bushings or seal. If not required, then slide lever shaft up, rotate 180°, and rest lever on back of case.



11

Remove four (4) socket head cap screws holding valve, valve spacer, and cover to control (or actuator) housing. Actuating lever, pin, seal and washer will be removed with the valve.

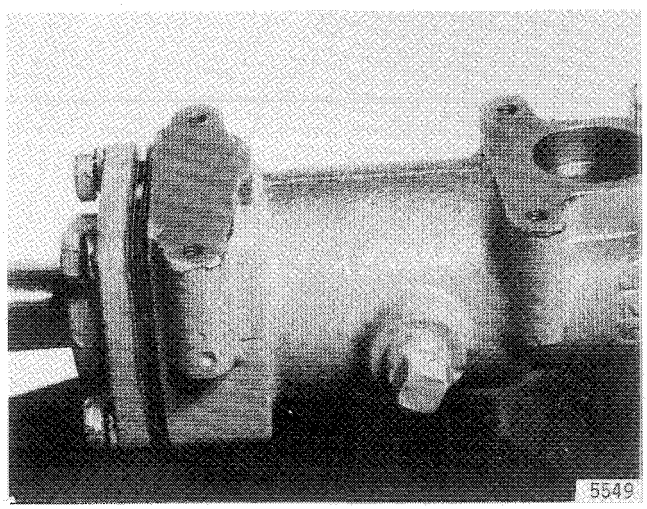
Previous valve configuration is pictured. Service to this assembly is illustrated on page 11.



12

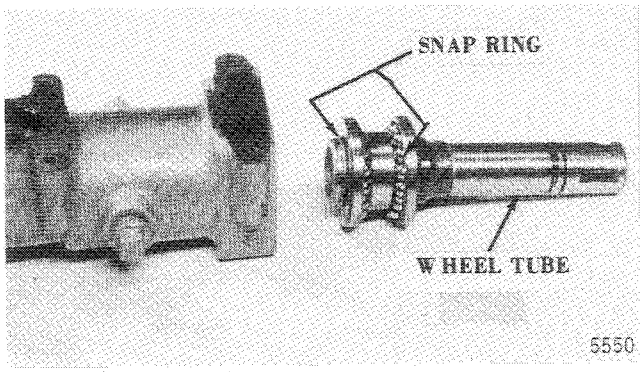
On orevious models (with one-piece control or actuator housing) remove four (4) cap screws, cover, shims, and qaskets. Wheel tube can now be removed. Inspect bearings and splines for serviceability.

On models with two-piece (separate upper cover and actuator) actuator housing, proceed to Step 18 on page 7.



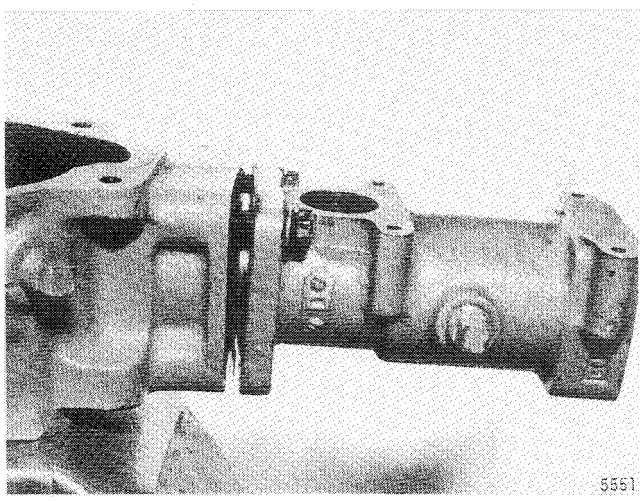
13

Wheel tube bearings can be replaced by removing retaining snap rings. It appears that each bearing is missing one ball--this is correct. Balls must be replaced by sets only.



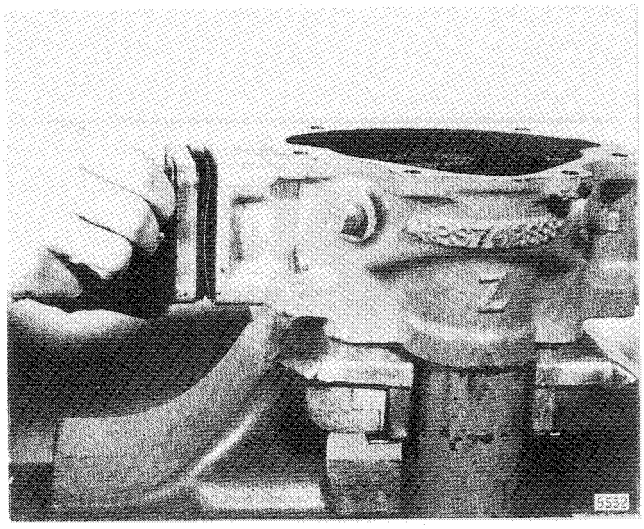
14

Remove cap screws, control housina, and qasket. Insoect control housing for internal bearing race wear.



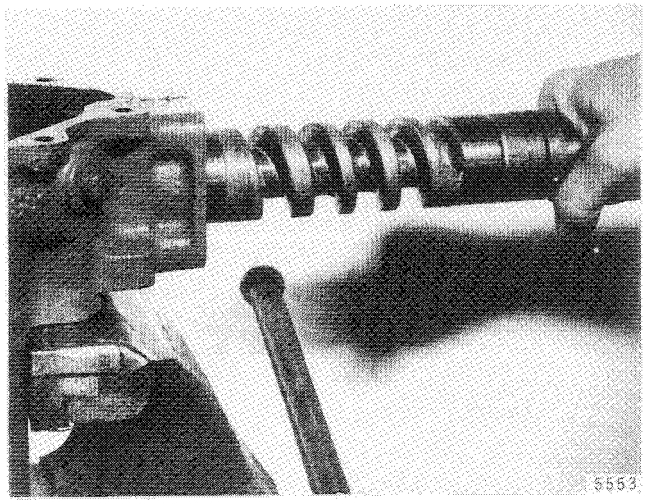
15

Remove cap screws, shims, qaskets, sleeve retainer, and end cover. Cam assembly can now be removed.



16

Remove cam assembly.

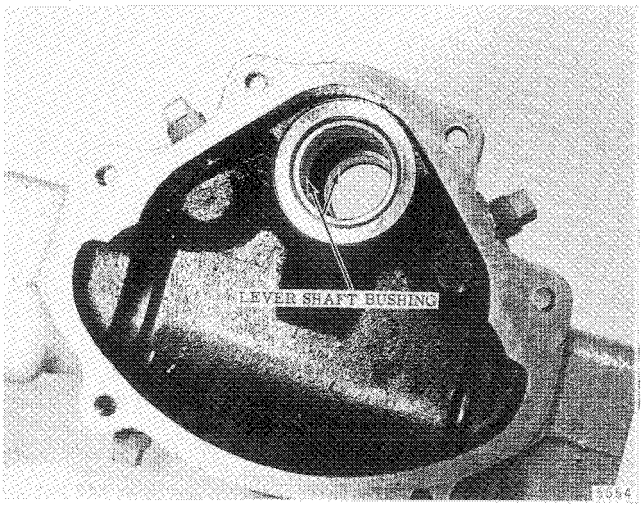


17

Inspect case at mountinq for wear or breakage.

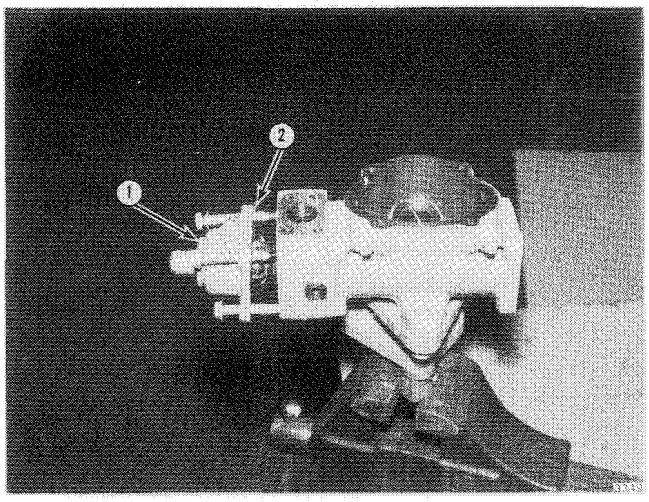
Inspect lever shaft bushing for wear or damaqe and replace as required.

Proceed to Step 24 cn paae 9.



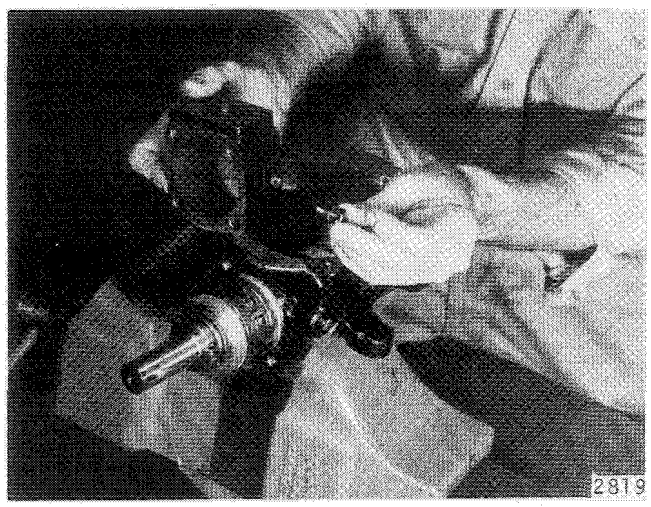
18

On models with two-piece (separate upper cover and actuator) actuator housinq, remove cover (1) and gasket (2).



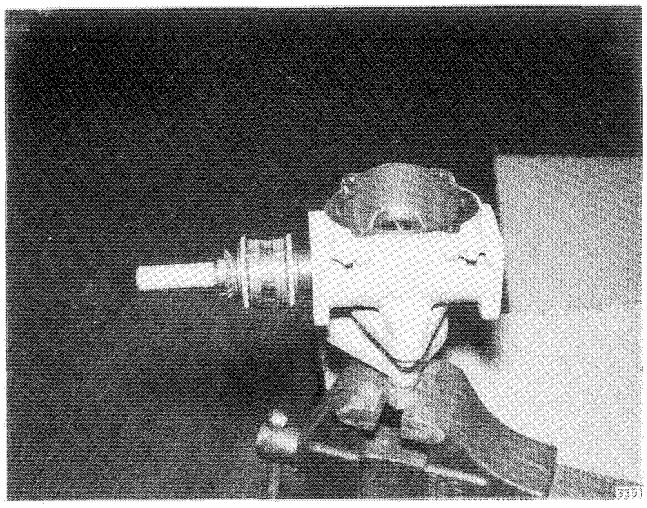
19

Remove actuator retainer screw and washer, then remove actuator housinq and gasket.



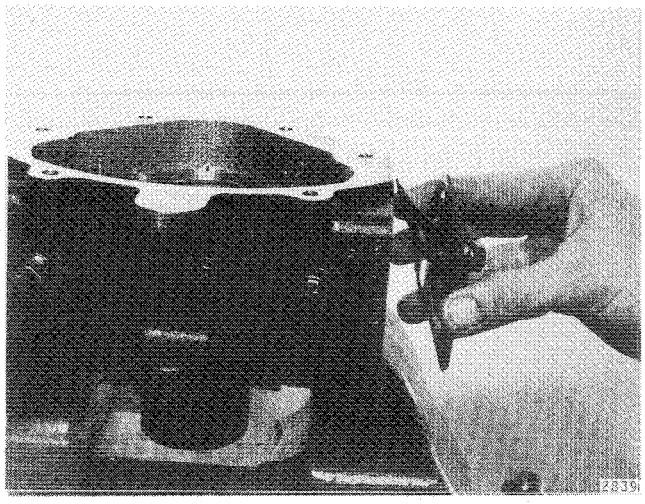
20

Remove cam and actuator assembly.



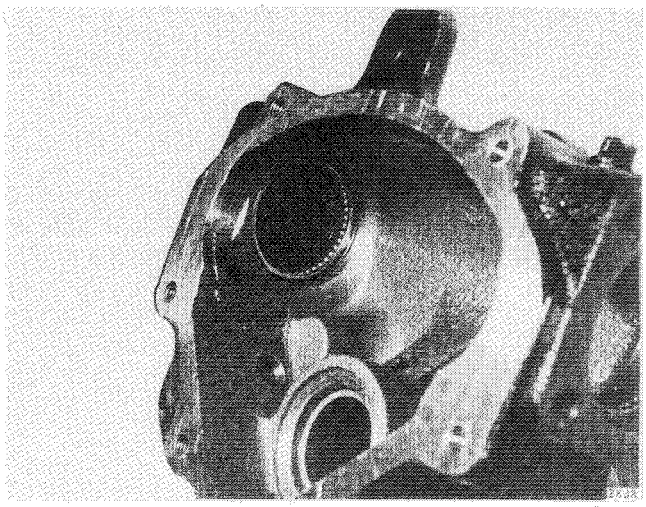
21

If cam assembly bearings require reolacement, remove end cover and gasket.



22

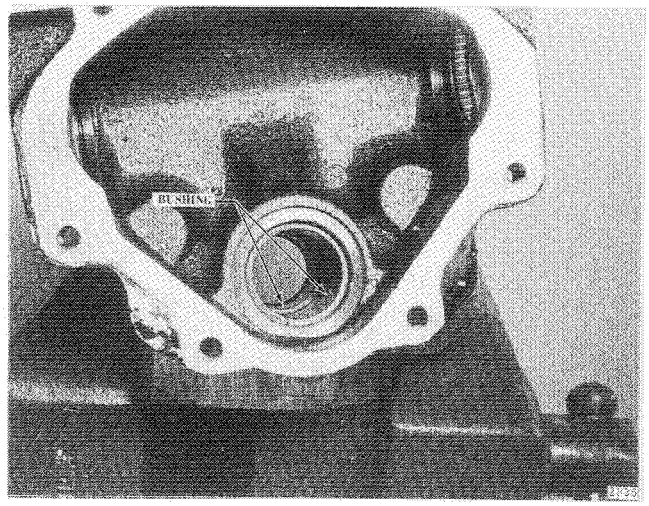
Reassemble needle bearings into housing. Press to locating ring with extreme care.



23

Inspect case at mountinq for wear or breakape.

Inspect lever shaft bushina for wear or damage and replace as required.

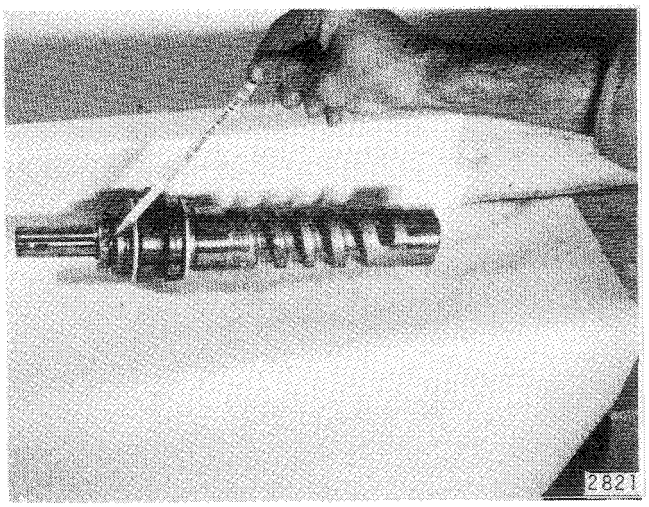


SERVICE TO CAM & ACTUATOR ASSEMBLY

24

Later models with two-piece actuator housing employ an actuator unit assembled on the cam.

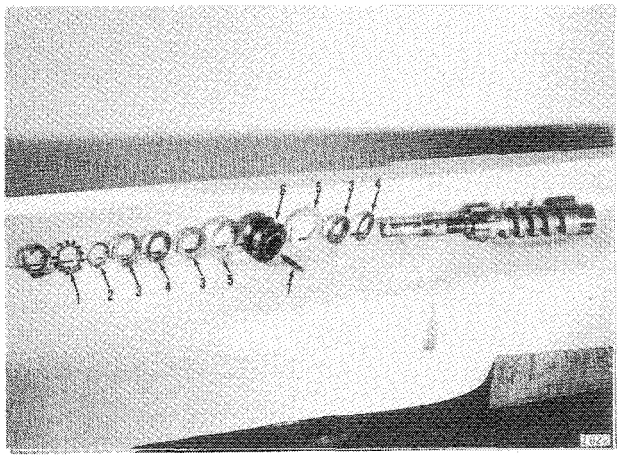
Remove adjusting nut after straightening bent prong on lock washer.



25

Remove lock washer (1), tongued washer (2), thrust washers (3), needle bearing (4), and upper centering washer (5) from above actuator. Do not lose springs (7) in actuator.

Remove lower centering washer (5), thrust washer (3), and needle bearing (4) after removing actuator (6).



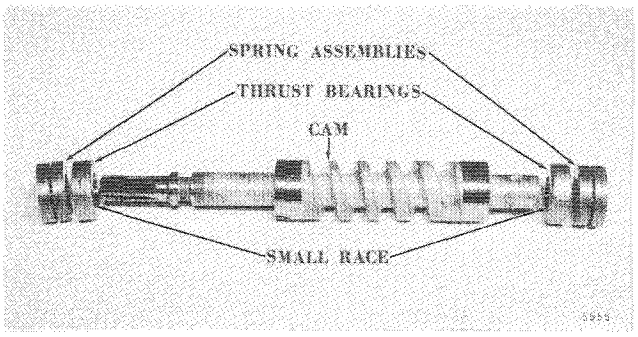
26

Inspect cam for damage and excessive wear. Check cam groove for chipping, scoring, or brinnelling. Check cam bearing surfaces and splines. Wearing away of copper platina is natural and will come in time to all cams.

Pictured is the cam assembly used in previous units with one-piece control housing. Spring assemblies are not adjustable. They are factory set. The smaller race of the thrust bearing should be located next to the cam.

On later models with two-piece actuator housing, reassemble actuator assembly on cam wheel tube assembly and adjust. Prior to assembly, make sure that threads are straight and that nut can be run down by finger torque all the way. Assemble in order shown in Step 25.

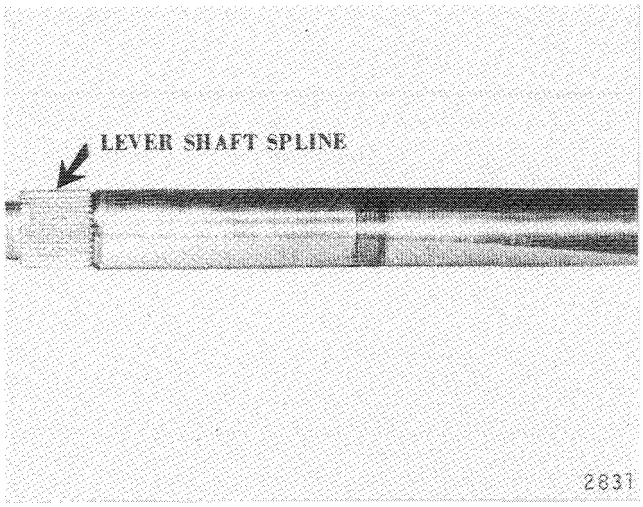
Tighten nut to 10 ft.-lbs. torque. Then back off nut 10° or 5/32" (the width of a lug on the locking washer). This adjustment must result in a light preload on bearings but allow NO end play of actuator on shaft.



SERVICE TO LEVER SHAFT & STUD ASSEMBLY

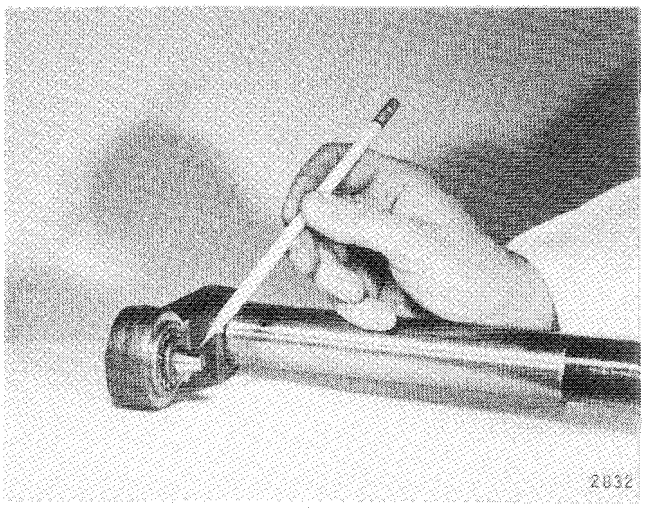
27

Check shaft splines and threads on lever shaft. Reolace if needed.



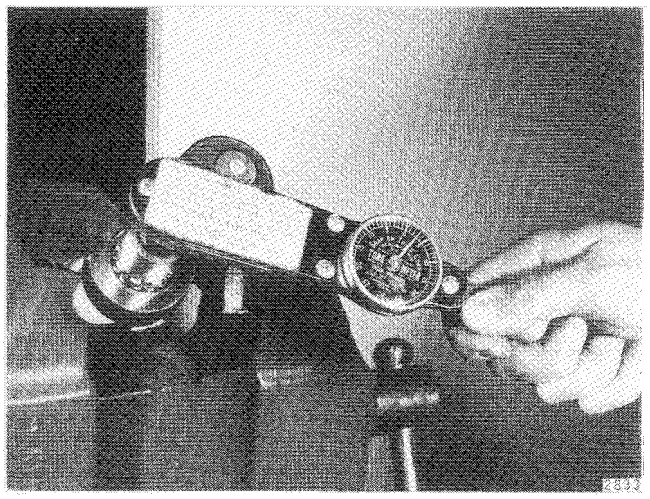
28

Check stud for flat spots, nicks, or spalling



29

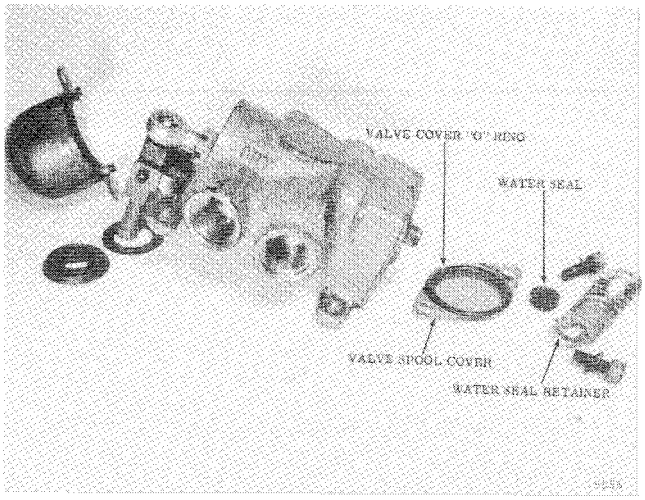
Adjustment of stud roller bearinq must be set to three inch-pounds preload for correct ooeration.



SERVICE TO VALVE ASSEMBLY

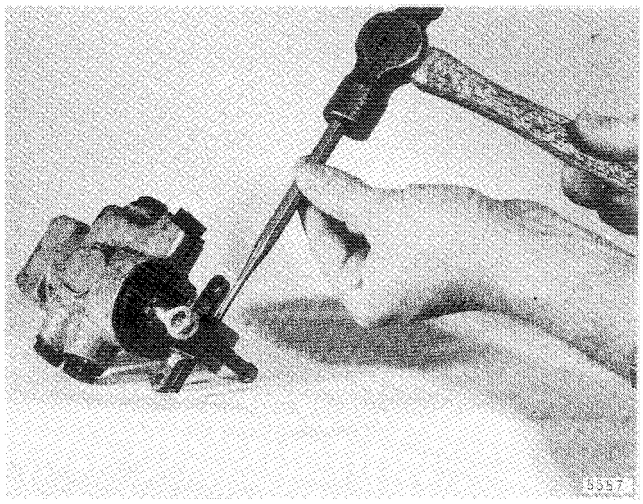
30

Remove water seal retainer, water seal, valve spool cover, and valve cover "0" ring by removing two(2) can screws.



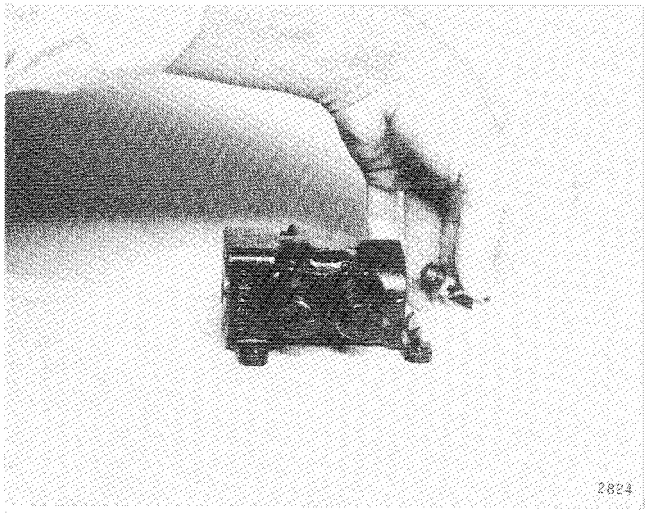
31

On some previous model valve assemblies, drift out pin with small punch and remove actuating lever from swivel bearing rod and valve body.



32

Remove clevis or swivel bearing rod from end of spool by removing cotter pin, loosening nut, and unscrewing rod from spool.



This is the sample of the manual if you need complete manual

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